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DETROIT

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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N. A. C. C. Clarifies Revenue Bill Amendment, Declaring That It Is Not a Floor Tax

Alfred Reeves Says Dealers Should Make Spot Inventory of Parts on Hand as of June 20 For Own Protection

New York, June 16.—News items regarding the joint resolution passed by Congress June 13, amending Section 625(a) of the revenue bill, gave the impression to some that it established a floor tax. This is not the case, according to Alfred Reeves, vice-president of the National Automobile Chamber of Commerce.

The statement follows:

The provision simply clarifies the situation with respect to contracts executed before May 1 by making taxable all deliveries after June 20, 1932, where title had not previously passed.

Under the bill as passed, certain long term contracts between manufacturers and consumers (primarily for tires and tubes) made no provision for collection of a tax on goods delivered under these contracts; hence they would have been untaxed.

Dealers should make a spot inventory of parts on hand as of June 20, for their own protection against charging tax on such goods.

Selling price of parts may include tax, with liability for tax determined on actual sales price less tax and other exempt charges. This also applies to the billing of cars and trucks.

The Treasury will probably hold that automobile clocks and radios may be bought tax-free by the manufacturer as automobile accessories, with the 3 per cent. rate applying to the complete vehicle.

Deduction of dealer allowance for local advertising before application of tax will probably be permitted, but national advertising charges cannot be deducted.

Trailers and semi-trailers are not taxed.

The House joint resolution follows:

Resolved, etc., That Section 625

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MAY TRUCK SALES 18,500 BASED ON 23 STATES AND D. OF C.

Detroit, June 16.—With the release by R. L. Polk & Company of sales figures for commercial vehicles in twenty-three states and the District of Columbia for May, 1932, we can now get an accurate picture of what the month will be in this division of the industry.

In these twenty-three states and the district total sales in May were 7,269 commercial units. This compares with 6,998 units sold in the same terirtory in April, and with 13,541 disposed of in May, 1931. The gain in April over May runs between 3 and 4 per cent. The decrease under May, 1931, is approximately 46 per cent., which is a little better comparatively than the passenger car sales are doing.

Based on the figures so far re-

(Continued on Page 4)

PONTIAC PLANTS SPEEDING OUTPUT TO AVOID NEW TAX

Pontiac, June 16.—To avoid new tax provisions on automobiles, trucks and motor coaches, work is being pushed in Pontiac factories before the tax takes effect June 21. An effort is being made in several plants to have operators take delivery before that date.

General Motors Truck Company is rushing to completion the last of an order for 200 motor coaches for the Greyhound interests, representing a million-dollar investment. All coaches are to be delivered before June 21, if possible. A 2 per cent. tax will be imposed on motor coaches and trucks at that time, with a resultant rise in prices.

At the Pontiac plant, F. O. Tanner, plant manager, said extra days beside the two-day a week schedule now in force were indicated for this month. The Wilson Foundry & Machine Company, manufacturing Willys-Overland motors and dependent upon Toledo for orders, has

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TODAY'S S. A. E. PROGRAM

10 A. M.—Auditorium
RESEARCH
A. E. Becker, Chairman

"Journal Bearing Characteristics in the Region of Thin Film Lubrication," by S. A. McKee and T. R. McKee, Bureau of Standards.

"Effect of Temperature on the Determination of Gum in Gasoline," by O. C. Bridgeman and J. C. Molitor, Bureau of Standards.

"Effect of Humidity on Engine Performance," by H. H. Allen and D. B. Brooks, Bureau of Standards.

N. S. P. A. OUTLINES METHOD TO USE UNDER NEW TAX

Detroit, June 16.—For the purpose of recommending standard procedure for the application of the 2 per cent. tax on parts and accessories, special taxation committees representing the National Standard Parts Association, the Motor and Equipment Manufacturers Association, and the National Automotive Parts Association met in joint session at N. S. P. A. headquarters in Detroit

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AUTOMOBILE COMPANIES IN SOUND FINANCIAL CONDITION, FIVE SHOWED 1931 PROFIT

New York, June 16.—The prevailing curtailment of buying that is making itself felt in practically all lines of business showed unmistakably in the 1931 operations of the automobile industry. Nevertheless, increased aggressiveness and alert ability to readjust themselves quickly to changed conditions enabled five of the eleven leading manufacturers—exclusive of Ford—namely, General Motors, Nash, Auburn, Chrysler, and Studebaker to operate profitably.

And in the case of General Motors, Nash and Auburn these 1931 profits were of substantial size and may be regarded as extremely satisfactory in view of the circumstances which depressed commerce and industry in general throughout the past year.

The Nash Motors Company showed a net of $4,807,680.88. The General Motors Company earned a net profit for 1931 of $96,877,107.26. Auburn showed $3,579,848.76. Chrysler was next with $1,468,935.06, and Studebaker earned $859,805.41, a total net income for 1931 for these five companies of $107,593,377.37.

A survey of the financial condition of the automobile makers indicates that, with but few exceptions, they are in a strongly fortified position to continue to weather a difficult period. The eleven companies listed above, at the end of 1931, possessed combined current assets of $596,163162.67 with combined current liabilities of only $129,761,545.14, and the ratio of current assets to current liabilities was 4.59 to 1. General Motors led, with current assets of $358,502,579.07; Chrysler was second, with $76,320,110.05, and Nash was third with $39,786,731.26.

In ratio of current assets to current liabilities, Nash, with current liabilities of $2,710,153.18 headed the entire group, with a percentage ratio of 14.68 to 1, as compared with 4.24 to 1 for General Motors and 6.74 to 1 for Chrysler. Graham-Paige had current assets to current liabilities with 1.77 to 1. The Hudson ratio of current assets to current liabilities was 4.11 to 1; Hupp, 6.95 to 1; Packard, 7.85 to 1; Reo, 8.89 to 1; Studebaker, 2.27 to 1; Willys-Overland, 2.54 to 1, and Auburn, 7.49 to 1.

Unsprung Weight Reduction, Tires Headlighting, Discussed by S.A.E.

Technical Sessions Are Well Attended and Keen Interest Is Shown in All Subjects; Weather Clears, Permitting Outdoor Events

By WILLIAM C. CALLAHAN
News Editor

White Sulphur Springs, W. Va., June 16.—With the summer meeting on its way to close it is fair to report that proportionately the technical session has been better attended than in the past. This is due probably to the fact that current conditions have taxed the research departments of automobile companies to the limit in efforts to bring improvements which will increase speed, safety and salability of cars.

One of the most important developments of the meeting has been the reversal apparently of the long held opinion that a reduction in unsprung weight is to be desired in all automobile designs. The advent of the jumbo doughnut tire has brought about this reversal of viewpoint to a great degree. Papers presented by Bill Stout and C. R. Paton, earlier in the week were directly opposed on this question. Stout, speaking from the airplane manufacturer's point of view, favored the reduction in unsprung weight, while Paton points out that from the automobile maker's point of view this idea is erroneous.

As a result this changed point of view has been reflected in other papers presented this week, particu-

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GRAHAM SIX FOR '33 TO BE ANNOUNCED IN SATURDAY ISSUE

Detroit, June 16.—Graham-Paige on Saturday will announce its six-cylinder line for 1933. This new Graham embodies a number of interesting features, among them a composite aluminum cylinder head and automatic clutch control. The emphasized feature of the aluminum cylinder head is that it will permit the use of ordinary grades of fuel.

In outward detail the new six will be the counterpart of the Graham eight and embodying all the mechanical features of that series.

A complete description and photographs of the new Graham six line will appear in the Saturday, June 18, issue of Automotive Daily News.

AUBURN HAS 1,800 UNFILLED ORDERS; DAILY AVERAGE 170

Auburn, Ind., June 16.—E. L. Cord today announced that the Auburn Automobile Company now has on hand unfilled orders for cars to a total of 1,800 units. He further stated that new orders are coming in at the rate of 170 daily.

The Auburn organization has stepped up operations within the past week, since the announcement of new low prices on its eight and twelve cylinder lines. The home plant in this city has recalled hundreds of workers and the Connersville plant is going at a greatly accelerated production pace, with a greatly increased pay roll.

M. E. W. A. DELEGATES WILL TACKLE VITAL PROBLEMS JUNE 20

Chicago, June 16.—Plans were completed today at headquarters of the Motor and Equipment Wholesalers Association for the first annual summer conference of regional groups affiliated with the national organization, to open here at the Edgewater Beach Hotel Monday and continue throughout Friday.

Advance estimates indicate that

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PERSONAL NOTES FROM WHITE SULPHUR

By WILLIAM C. CALLAHAN

White Sulphur Springs, W. Va., June 16.—Miss McCormick of the S. A. E. was one of the first passengers in the autogyro brought here by E. C. Johnson of the Piston Ring Company.

* * *

This ship also served to give F. M. Watts, chief engineer of Hupmobile, and Mrs. Ted Gamble their first autogyro ride.

* * *

Frank Kalb, chief engineer of Continental Motors, took his first gyroing and came back all for it. One thing Frank was worried about was the Greenbrier sheep which browse about the airport. Frank says he envies the sheep that has nothing else to do all day but chew grass.

* * *

"Sandy" Brown won the golf tournament in spite of the rain, which was followed by a scorching hot spell.

* * *

Guy Motz did take that raid after all.

* * *

Jack Warner is thinking of using the gyro to hunt up some of the golf balls he has knocked into the rough. This idea was passed on by F. M. Watts, who spotted two of his on his trip Tuesday.

* * *

The semi-annual business session was presided over last night by A. J. Scaife, president, and during it Mr. Scaife emphasized that the society is not letting down the bars in seeking new members, but pointed out that there are many engineers qualified to join who are not now members.

Prize Winning Letter in A. D. N. Contest—See Page 3

S. A. E. Discusses Unsprung Weight Reduction, Tires

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larly in the brake drum and brake lining papers presented at the chassis section yesterday morning. Working on the hypothesis that unsprung weight has much to do with better riding qualities, the brake drum manufacturers have put forth much of the efforts toward the development of drum to bring about a reduction in weight. This has resulted in centrifugally cast drums and lights steel drums which may be affected if the idea of increasing unsprung weight is generally adopted.

A paper presented by F. L. Main of Kelsey Hayes Wheel Corporation compared the relative qualities of pressed steel and cast iron as brake drum material and through the use of photomicrograph slides indicated grain structures and so forth favorable to cast iron. This paper was supplemented by a written discussion by A. S. Halteren, executive engineer of Motor Wheel Corporation, which was largely in agreement with Mr. Main's opinions.

Discussion led by Xergeant questioned the advantages of centrifugally cast drums. That is, steel shells in which cast iron is centrifugally spun as a wearing surface, and permanet mold cast iron drums. With the advent of the jumbo tire and the consequently smaller size allowances for brake drums Mr. Xergeant questioned whether or not heat dissipation would limit the reduction in size of the present brake drum.

Mr. Forbes described an integral hub and drum which his company is developing which will be made of material of much higher tensile strength yet which would have an action similar to cast iron in its wear of brake lining and freedom from scoring. This drum was being designed with the idea of reducing unsprung weight and may now be altered if this trend shows a definite adoption of the heavier under carriage idea.

Of course, this trend to higher unsprung weight seems to be based largely on the growing popularity of the doughnut tire which has introduced many new difficulties. There are tire men here who are of the opinion that while the larger section tires are undoubtedly on the way, the genuine doughnut will not set so well with the present car designs and the units most likely to be adopted will be modifications of the present jumbo. Of course these men

At the headlight session Tuesday cannot be quoted.

evening it was evident that considerable progress has been made in the improvement of this equipment and that fixed focus lamps are to be desired over manual focus type. Discussion developed that the greatest trouble with road illumination by car headlamps is not so much a question of equipment as it is one of use by operators. Highway lighting by street lamps is desirable, it was pointed out in all cases where traffic would warrant to cost such equipment.

A new ultra-violet ray used for "black" lighting on instrument panels and so forth, was demonstrated by R. E. Carleton of the Bureau of Standards.

MISSOURI REGISTRATION RECORD DROP OF 23,824

Jefferson City, Mo., June 16.—Commissioner Oscar G. Steininger reports that the state automobile registration department, from February 1 to June 1, issued a total of 594,983 licenses, of which 71,892 were on trucks and 523,091 on pleasure vehicles.

The total issued up to June 1, 1931, was 618,807, a decrease for this year of 23,824.

The money collected for the licenses for the first four months of this fiscal year, which began February 1, totals $5,882,302, as compared with $6,256,000 up to June 1, 1931, a decrease of $373,698.

TIRE-BATTERY FIRM FORMED

Dallas, Tex., June 16.—The Newton Tire and Battery Company, Inc., has just been formed here by C. G. Duncan, J. F. Morgan, Jr., and W. F. Johnson.

M. E. W. A. DELEGATES WILL TACKLE VITAL PROBLEMS JUNE 20

(Continued from Page 1)

between 125 and 150 jobbers will attend the sessions, including officially appointed representatives from the seventeen regional groups, other M. E. W. A. members and still others co-operating with the association.

"The summer conference will give nation-wide expression to jobber sentiment," states B. W. Ruark, general manager of the M. E. W. A. "For instance, the presence of official delegates means that indirectly, yet actually, about 450 jobbers of various affiliated groups in all parts of the country will be represented."

Jobber interest is reported at a high pitch, largely due to the importance of the matters that will come up for discussion and action. These will include recommendations for handling the new automotive excise tax; trade practice, with stress upon preferential treatment accorded channels of distribution that compete with jobbers; intensified competition from car manufacturers and others, based upon recent public anouncements and statements of policies by certain manufacturers closely affiliated with competing interests, and the need of consolidating the interests of regional groups now functioning as working units of the M. E. W. A., so as to present a solid front to problems affecting the industry.

Directors of the Motor and Equipment Wholesalers' Association will meet Sunday morning at the Edgewater Beach Hotel and will remain over for the summer conference.

Between the morning and afternoon sessions of the general conference Monday those in attendance will adjourn for luncheon to the Auditorium Hotel, where E. T. Satchell, president of the M. E. W. A., will be the guest chairman and speaker at a meeting of the Chicago Automotive Boosters Club.

Members of the Great Lakes Automotive Wholesalers' Association meet here Tuesday, and at the conclusion of their session they will join the general conference. Delegations from several other nearby regional groups will also attend in large numbers.

ETHYL TO GO ON 5-DAY WEEK BEGINNING JULY 1

New York, June 16.—Adoption of the five-day week by the Ethyl Gasoline Corporation was announced yesterday by President E. W. Webb. The change, effective July 1, applies to the entire organization.

The action of the corporation, it was said, was taken to meet the changed conditions of indstry,u which demand a wider diffusion of the service of labor without additional total expense to industry. Under the new plan the income of each employee will be reduced by one-eleventh, which corresponds to the reduction in thenumber of working hours.

"Except as above stated," according to the announcement, "the corporation will continue to function and condctu its business as heretofore, that is to say, the hours of the corporation, as such, will continue as at present, and as has been customary. The maximum of five days a week applies to the employees, and is not to affect the accustomed hours of business of the corporation itself."

FORD ORDERS SPURRING MOORE DROP FORGING

Boston, June 16.—The Moore Drop Forging Company has taken on 200 to 250 additional employees recently in reflection of substantial pickup in incoming business. Ford Motor Company is taking approximately 80 per cent. of Moore's production.

LINCOLN DEALER NAMED

Mobile, Ala., June 16 (UTPS).—The Lincoln Motor Company has announced the appointment of Folsom-Toulmin Motor Company, 450 St. Louis St., as a dealer here.

FINANCIAL NEWS

CITIES SERVICE

New York, June 16.—Gross earnings of Cities Service Company for the month of May, 1932, amounted to $3,077,289, as compared with $3,320,366 in May, 1931. Net earnings for the same period were $2,913,584, compared with $3,132,199 for the same month last year.

LEE TIRE

New York, June 16.—The committee on securities of the New York Stock Exchange has received notice from Lee Rubber and Tire Corporation of proposed change in authorized capital stock from 300,000 shares of no-par value to 300,000 shares par value $5 per share.

REPUBLIC STEEL

Youngstown, O., June 16.—Republic Steel Corporation has resumed production at all three of its steel strip mills at Warren, O. The mills have been idle more than a week. New orders from the automobile industry made the resumption possible.

GRAND RAPIDS VARNISH

Grand Rapids, Mich., June 16.—Grand Rapids Varnish declared a quarterly dividend of 7½ cents a share on the no-par common stock, payable June 30 to stock of record June 20, a reduction from 10 cents a share formerly paid.

GASOLINE PRODUCTION

New York, June 16.—World production of natural gasoline in 1931 totaled 49,887,000 barrels, a decrease of 9,324,000 barrels, or 15.6 per cent. from the record total of 59,111,000 barrels reported for 1930, the United States Department of Commerce reports.

The decline in world production resulted from the drop of 18.4 per cent. in the output of natural gasoline plants in the United States, as production in foreign countries increased from 6,481,000 barrels in 1930 to 6,911,000 barrels in 1931, a gain of 430,000 barrels, or 6.6 per cent.

AMERICAN CAR STOCKS IN FOREIGN MARKETS RUN NORMAL TO LOW

Washington, June 16.—Normal to low stocks of American cars obtained in a great majority of foreign countries on May 1, 1932, according to a survey just published by the automotive division of the Department of Commerce.

American car stocks compared favorably in most instances to those of foreign competitors. Thus in many cases where American stocks were low, foreign stocks were normal, while normal American stocks in other countries were balanced by high foreign stocks.

High stocks of all new cars reflected the unfavorable political conditions in Chile, while low stocks obtained in used cars of all kinds.

Low to normal stocks of both new and used American cars obtained in the United Kingdom, with high stocks of foreign-made cars in all grades except the low-priced types which were normal.

Low and normal stocks of new cars, both American and foreign made, obtained in Germany, while stocks of used cars were high.

Stocks of American cars in France were normal except for the low-priced types which showed high inventories, and the used cars which were seasonally high.

Australia was one of the few countries showing high stocks of American cars, except for used cars, which were unusually low.

BREEZE NAMES STEENSON

Newark, N. J., June 16.—Breeze Corporations, Inc., has appointed James H. Steenson to its staff as aircraft engineer. Mr. Steenson entered the aircraft trade in 1914 as designing engineer with the Sloane Manufacturing Company of Bound Brook, which was later moved to Plainfield as the Standard Aircraft Company.

PURCHASE DEALERSHIP

Anita, Ia., June 16.—E. E. Barnholdt and Frank Black of this place have purchased the Ford dealer firm here and this week assumed management of the business.

SPARKS from DETROIT

Hitting the Bull's-eye

* * *

Flowers and Tires

* * *

Doesn't Mean Rubber Plants

* * *

Floating, Lining Brake

* * *

Chris Sinsabaugh—Detroit Editor

DIDN'T the column predict a short time back that 1933 announcements would start a-popping early this summer? That shot hit the bull's-eye plunk in the center, for I have just come back from a ride in a next-year car. I'll tell you more about it tomorrow, for that's the day set for the coming-out party.

I'll admit I came pretty near being scooped on this, for the company bringing it out had successfully managed to keep its secret until now. I've been doing my worrying about another make that is getting set for its announcement and had not been expecting the first of the new crop would come from an entirely different quarter.

* * *

EVER SINCE the automobile business has been on the map, which is about half my lifetime, I have listened to the flowery talk of the tire salesman, although I must confess I never have seen any reason for what might be termed flowery talk. The connection between flowers and automobiles, or even bicycle tires, has been something that has puzzled me. Strange to say, however, I have at last found the connection. My thoughts have changed, for what I have found makes the relationship between tires and flowers very obvious. In making my discovery I also have found a real altruistic use for the old tire.

* * *

OUT IN BIRMINGHAM, our aristocratic suburb to the north of us, I passed along a street, the average type of street one finds on the fringe of the high-hat sections. In the front yard of a modest but well-kept home my eyes were greeted by the sight of three old whitewashed tires, laid flat on the ground, and in the center of each, or what would be called the hole in the doughnut, there were verbenas, calendulas, petunias and nasturtiums blooming. One naturally would have expected to find rubber plants.

Here's an idea for the corner filling stations and other places that now sport broken parts and piles of wornout tires.

* * *

A LETTER POSTMARKED "Painted Post, New York," just dropped on the conductor's desk by the last mail man, produced a guffaw from an ill-bred person who picked it up, who tried to get funny about the odd name. I can't get him, though. Painted Post really is on the automobile map, for it is the home of the Hawley-Jones Corporation. Besides, the letter tells me, Jess Hawley, president of the company, is one of my public and actually reads the column. Then, again, Painted Post is almost within a stone's throw of a my birthplace, Athens, Pa., and my dad, a traveling salesman, used to "make" Painted Post.

* * *

THE BIG NEWS Jess Hawley has to tell is that his company has developed something new, the floating lining brake, which uses both sides of the brake lining, instead of one, while the lining itself is free—not riveted to the brake band. And they tell me that Painted Post is now a port of call for representatives of companies looking into the merits of the new brake.

* * *

OUR OWN GEORGE SLOCUM and the column conductor went ariding the other day in a car fitted with an automatic clutch. Our George never had tried one of the new dinguses, so he persuaded the owner to let him drive. Of course, our George got a real thrill out of his experience, but from it came a suggestion that sounded logical. George had no use for his left leg with the automatic clutch, so he gave birth to the idea—why not put an auxiliary horn button on the floor board at the left of the clutch, and operated by the foot, which could be used when the driver's hands were otherwise busy?

* * *

ONE OF MY FRIENDS, representing a farm paper, sees the silver lining in the depression cloud, so far as the farmers are concerned. He says that allowances on used cars are now so low that when the farmers come into the market and really begin buying they will not be looking for trade-ins. Having plenty of storage room for the old cars and also plenty of use for them, too, they will keep them instead of trading. He estimates that at least half the cars the farmers will buy from now on will be clean-cut sales, no trade-ins. With farmers taking about 40 per cent. of the cars, this looks like a lot of profitable business.

Retail Salesmen—This Is Your Page

This department is devoted to the interests of the retail sales division of the industry. Salesmen, this is your department. Automotive Daily News wants you to get something from this department that will help you in your work on the firing line. It wants you to pass on your own experiences, successes, failures to help your brother salesmen. Send in your story in the form of a letter, or even a postal card, and let us get it ready for publication. Your achievement or your mistake may help another salesman to make sales or avoid errors that cost you commissions.

Dealers read this page. Give us the benefit of your reactions on these problems that affect the work of your salesmen, the men on the firing line, the men who bring home the bacon or don't.

SCHIEAR MADE HIS FORTUNE AS AN AUTOMOBILE DEALER

By MICHAEL FIELDING

At first acquaintance there is little about Charlie Schiear that is strikingly different from the average successful automobile dealer. But it isn't long before you notice that Old Man Depression has utterly failed to dampen his spirits or shake his faith in the future of the automobile business. His infectious laugh and enthusiasm are an inspiration which makes you feel that all's well with the world and that Lady Prosperity is just about to bounce out from her hiding place around the corner.

Chas. Schiear

Schiear, who is president of the Charles Schiear Motor Car Company, Studebaker distributor in Cincinnati, entered the automobile business as a dealer, with limited capital, twenty-four years ago, and in the succeeding years made it grow into a fortune. His home, located in Pleasant Ridge, Cincinnati, is considered one of the town's show places. It is a thirteen-room, three-story brick structure, surrounded by seven acres of beautifully verdured grounds.

His main business plant and five branches, located in Cincinnati, Cheviot, O.; Norwood, O.; Dayton and Covington, across the river in Kentucky, are worth $800,000. The main showrooms and service station at 9th and Sycamore Streets, Cincinnati, represent an investment of $300,000, while the Dayton plant is considered one of the finest and best equipped in the country.

Schiear's recent assumption of the Studebaker franchise marked the association of a pioneer dealer with a pioneer manufacturer. For just as Studebaker's automotive history harks back to the romantic days of the horseless carriage, so Schiear also epitomizes the automobile dealer of a nearly forgotten era, when selling cars was a precarious hand-to-mouth venture, and when trade-ins involved the horse and buggy, the family cow or the baby carriage rather than last year's model.

Schiear was born on a farm in Montgomery, O. At 20 his father decided he was old enough to paddle his own canoe and, giving him $10, sent him out into the world to fend for himself. The youth wandered to Walnut Hills, near Cincinnati, where he knew a friend of his father who was in the grocery business. He prevailed upon this man to sell him a horse and wagon on time. Schiear mentions with pride that this is the only money—a matter of $65—that he has ever borrowed.

In return for this favor, Schiear invested his own cherished capital of $10 in a small stock of fruit and vegetables, which he loaded on his newly acquired wagon and peddled to neighboring homes. At the end of the first day's business he found himself with $13—a profit of $3. Day after day the youth would put both capital and profit into more groceries, exacting a living which permitted him not only to fare well but also to put a little on the side. The horse and wagon were soon paid for, and shortly thereafter, by dint of systematic saving, young Schiear was able to lease a barn in Evanston, O., and start a small coal and feed business.

By 1908, the people were becoming more and more intrigued by the automobile. It was the popular topic of conversation at gatherings, some championing it, others refusing to concede any future for the new-fangled contraption. Schiear says that when he started to build his first garage in Evanston later the same year, neighbors warned him that the automobile couldn't last and upbraided him for being foolish enough to invest any money in a venture which promised such little hope of success.

But Schiear was of a different opinion. The more he thought it over, the more he was impressed with the possibilities of the new invention. One car particularly appealed to him. It was the Brush runabout, a one-cylinder affair with a top speed of twenty-five miles per hour, which retailed for around $700. It would make a nice sideline to his present business, he argued. Accordingly, he assumed the dealership for this car, depositing $100 for the privilege.

Purchasing a model and storing it in his barn, together with his stocks of baled hay, Schiear went out after prospects, offering all and sundry a demonstration in the new car. A few months later he added a two-cylinder Oakland to his line.

Thinking back to those days, Schiear delights to relate his early experiences as an automobile dealer. He tells with a chuckle of how he would drive his "one-lung" demonstrator to all public gatherings and county fairs and maneuver it before the admiring (and often sneering) glances of spectators. The evincing of any unusual interest on the part of an individual was the signal for a direct attack and a sales talk which more often than not left the prospect more scared than convinced that he should intrust life and limb to this unique though fearsome automotive development.

Many prospects, however, proved amenable to persuasion. Schiear speaks of a blacksmith whom he drove thirty miles to see—a formidable distance in those days—and sell if possible. His efforts bore fruit eventually, for the setting sun that evening found him riding homeward on the back of a large gray horse which represented the trade-in on the car.

"To sell people in those days one had to accomplish two important things," he said. "First, persuade the prospect to dispose of his horse and buggy, for as long as there was transportation available sales resistance was hard to overcome. Second, one had to convince the prospect that he could master the mechanical intricacies of his new mount, as well as drive it. There were so many people who sincerely believed that they would never be able to handle motor cars that adequate driving instruction was an important part of the dealer's work."

In the following April, Schiear decided to try his luck with a new car just being placed on the market, a two-seater Hupmobile equipped with a two-speed transmission, which was considered an epochal engineering development. Invited by R. C. Hupp, president of the new company, Schiear journeyed to Detroit to inspect the factory of the new organization.

"To my surprise," he said, "all I could find was a little bare red barn in an alley. There was not a sign of activity anywhere, and no machinery visible. Finally, after five weary days of waiting, I saw a horse-drawn express wagon draw up with two automobile bodies on it, and I knew then that the factory had started up and would operate. I became Hupmobile's third distributor."

Schiear contracted for twenty cars, and in return was awarded the franchise for half the state of Ohio, half of Kentucky and the entire state of Virginia. By June he had sold his entire stock of cars. Requesting a further allotment, he was told that he had used up his quota for the year and that the factory was unable to consign him any more cars. An amusing situation, indeed, in the light of present-day merchandising problems!

What to do? Here was a dealer all set to dispose of additional cars and no new cars in sight. There was only one way out for Schiear. Look for another make! In quick succession he handled Velie, the National and many other makes unknown to modern motordom. By 1912, however, Schiear was again dealing in Hupmobiles exclusively.

Four years later Schiear took on the new Premier—the first electric gear-shift car on the market. Its cost was $1,600 to $1,800. In 1917 he began selling Hudsons in conjunction with Hupmobile, until the Essex entered the field, when he continued with both this car and the Hupmobile.

In 1921 Schiear transferred his allegiance to Hudson and Essex exclusively, continuing with the line until November, 1930, when he assumed the Chevrolet franchise in Cincinnati and the Studebaker contract in Dayton. On April 11 this year he decided to give his entire efforts to Studebaker, and assumed the Studebaker distributorship for Cincinnati and southern Ohio.

Discussing some of the problems which confront the modern dealer, Schiear pointed out that the used car problem was practically nonexistent prior to 1914. Even in 1916, he said, factory production was having a hard time keeping pace with demand, so that it was comparatively easy to sell a man a used car, rather than have him wait weeks or even months for the arrival of new cars.

"In those days, even as late as 1919, half my time was spent at the factory begging for cars," he stated. "I used to employ a traveling representative who journeyed around the territory, not to sell but to persuade dealers to postpone their orders until I could deliver. A vast difference from conditions as they now exist. By 1921, however, things had changed and factory production began to keep abreast of orders with plenty of new cars available."

Asked to what he attributed his success as an automobile dealer, Schiear said: "Throughout my career as a dealer or distributor, I have always been able to make money. With the exception of my first $65, I have never had to borrow, and I don't owe a dime today.

"To merchandise motor cars successfully, a dealer must make a profit on each and every unit sold. Long profitless trades spell ruination in the long run. The rules for making money in this business, or in any similar line, for that matter, are simple enough. They may be summed up in a short nine-word sentence: 'Buy right, sell right, and keep the customer satisfied. Today's conditions are unusual, of course. But for that very reason a dealer must expend just that much more effort to analyze his own particular problem and solve it intelligently.

"My reason in taking on the Studebaker franchise at a time like this is because I believe Studebaker has proved the acceptability of its product and because of the friendly and helpful relationship known to exist between the factory and its dealer organization. While this year may not be as financially successful as we may hope, due to the general business recession, I know that when times change for the better I shall be sitting pretty with a line of big-value, high-quality cars which I can sell."

The Charles Schiear Motor Car Company has been doing business in its present Cincinnati headquarters for the past sixteen years. Carl Markle, sales manager of the company, and Pete Heareth, service manager, have been associated with the company for eighteen and fifteen years, respectively.

FINE CARS SINCE 1902

IN the Marmon Eight, each horsepower is called upon to pull only 29 pounds of car weight compared to 35 to 45 in the average automobile. This is one of the chief reasons for the amazing performance of this outstanding motor car.

MARMON

SALES DEPARTMENT INDIANAPOLIS, IND.

Today's $5 Winner

THE PERSONAL TOUCH

By D. F. KNOWLES
Sales Manager of the Evans Chevrolet Company, Janesville, Wis.

I am writing to tell you of our success in this abnormal year. Our dealership is located in Janesville, Wis., a city having a population of 21,000. We have six new car salesmen and one used car manager.

By carefully following our owner files, we make frequent and regular calls on these people, selling them service and getting tips on new or used car prospects from them. This idea of constant following of owners who have already bought from us keeps the salesmen busy at all times, and brings in a lot of service work, which is absolutely necessary today to any successful dealer operation.

We have two company cars in service as demonstrators, which are kept constantly in the hands of professional or business men. This has given us many prospects that otherwise we would probably not have found. It creates a very good feeling in the community toward us and centers attention on our car, because every one has a chance to see these prominent people riding in the vehicle we sell.

Instead of a regular sales meeting, I hold a five-minute interview with each individual salesman, going over the work he has done the previous day and mapping out his job for the day ahead. This method of handling contact gives me a closer check on my men. I believe the salesmen feel better as a result and do better work. It is the sort of personal touch that gets under the skin.

I have found that these three methods of carrying on are profitable, and perhaps all or some of them can be used by other dealers who are not getting their share of business. Perhaps a better way of putting it would be to say dealers who are not getting the extra business that is necessary to keep out of the red with the reduced volume of sales in this abnormal year.

WHERE DO WE GO FROM HERE

By F. S. SPRING
Hudson Motor Car Company, Detroit
(SECOND INSTALLMENT)

Then he told me that the three things were:

1. Learn Punctuality (in time)—This is most important, he pointed out to me, because time makes all things relative. Unless we time things correctly, they lose their expression and become ineffective and valueless. How often we say of one who has made a successful stroke: "Well, he was lucky to bring that out just when he did!" Thus, carelessly, we ascribe to luck what may really belong to a lifetime rule of punctuality—an appreciation of the value of time.

2. Learn the Value of Detail (in space).—When first we encounter a new thing or problem, we instinctively endeavor to grasp as much of the whole as is possible; then we take as much of it as we have been able to grasp and go off into a corner and proceed to divide it up; and then, like the boy who has taken his new watch apart, seek to reconstruct the whole, only if we are at all ambitious, we seek to improve and refine.

3. Learn Purity Through Manifestation, Through Expression.—This principle of his life rule seemed to search out and sum up the very reason for existence. He said that he used the word "manifestation" because he felt the term "experience" to fall short of comprehending it. Nothing in experience or in the realm of nature is absolutely pure; no alloy or distillation or compounding exists without its foreign matter, much or little. To understand the ideal source from which the closest approximation to real purity springs, you must bring it into manifestation, express it with the sincerest regard for purity of which you are capable.

If we were to accept these working principles for ourselves and our industry, how might we apply them? Suppose we want to build an automobile. We first form a plan, then we consider whether there is an adequate reason for the existence of such a scheme. An automobile has to be built, produced and sold in an economical manner; to serve the public adequately and thus win to favor, it must be priced at what its prospective owners can afford to pay, considering both the initial investment and the upkeep.

It is also more or less obvious that the people who are to work together in this endeavor must be as expert and experienced as possible, and if possible it would be best to choose a group that has worked together compatibly for a long while. Considering organization still further, there is naturally less friction and less waste in a small, compact organization than in a large, diffused one. History seems to indicate that larger organizations tend to grow top heavy and have to grow small again to start once more on the upward spiral and continue to live.

Now the basis of all human relations is confidence; so the policy of our group must be one that inspires confidence, and they must possess confidence in themselves to inspire faith permanently in the

(Continued on Page 6)

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"Of, By and For the Entire Automotive Industry"

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EDITORIAL DEPARTMENT

350 Hudson St., New York, N. Y. Telephone CA nal 6-1000.
Alexander Johnston, Editor. William C. Callahan, News Editor
Statistical Department (registrations and specifications), F. J. Robas, statistician. Engineering Department, A. Benson Carleton, technical editor. Merchandising Department, Charles S. Zack, editor. Art Department, John Bauerfeld, director.
Detroit Bureau, Chris Sinsabaugh, editor, 427-8 Fisher Building, Detroit, Mich. Telephone Trinity 2-3500. Contributing editor, John C. Wetmore.

How the Automotive Industry Can Lead

IT has been said in times past that the automotive industry was destined to lead the country out of the depression. Perhaps it can and may do this, but its chances of staging an economic comeback under present conditions have been greatly reduced by attacks upon it made in the recently passed tax law. Whether any industry can lead an advance while staggering under a burden of special taxation borne by no other business, or few of them, is a grave question.

However, before this or any other industry can stage a business revival, there are fundamental evils in our political condition which must be remedied. No industry can revive under a Congress which refuses to consider available means of raising governmental revenues on business now being illicitly done, free of all taxation, and burdens the rest of the country, individuals and businesses alike, with staggering imposts to pay for its fanatical refusal.

Automotive Daily News has just received a copy of a letter sent by S. C. Robbins of Detroit, an official of the Jones Dabney Company, outlining to a leading executive of the industry his views of how the automotive industry can take an effective part in curing our present lamentable political situation. Mr. Robbins believes that the automotive industry is in a peculiarly strategic position to supply the leadership that will get us out of our present dangerous condition. The letter follows:

"The problem of government, as well as the economic condition of the country, has reached a point where the people are actually hungry for leadership—a definite program that shows promise—a plan—something to look forward to and work for. The leadership and inspiration to give the people renewed hope can be supplied by the automobile industry.

"The first thing necessary is for the leaders to get together and decide upon a plan based upon proved, sound business principles for running the government. This plan should definitely show just how it is going to operate, what economies will be enforced, and what the savings will be to the taxpayers. Then decide upon the man for President of the United States; next select a man from each district for congressman and senator. Then take the proposition directly to the public—the voters.

"This could be done in a number of ways. One effective way would be to start a direct mail campaign to the some 26,000,000 automobile owners throughout the country, giving them the actual facts and figures and selling them on the plan, asking them in turn to go out and sell their friends and neighbors. At the same time, use to the fullest your some 75,000 dealers and thousands of raw material suppliers all over the country to carry on constructive, educational work among the voters.

"The money to handle such a program could be raised through public subscription. Raw material suppliers and the public in general would relish an opportunity to contribute to such a cause, sponsored by the leaders of the automobile industry in whom they have confidence.

"The above suggestions may not offer the best plan, but it is something definite—it is a plan—and my experience has been that even a mediocre plan, vigorously and intelligently worked, is more desirable and more productive than a brilliant plan indifferently or poorly worked.

"One feeling we must all get out of our system, and that is that conditions will automatically correct themselves, or that prosperity has always returned, and hence always will. These views will not stand analysis. A drowning man comes up a few times, but eventually he goes down for the last time. History shows that the average life of governments, from the earliest times down to date, is comparatively short, possibly not more than 250 years. Governments and civilizations like Egypt, Babylon, Athens, Rome, as well as more modern governments, including Russia under the Romanoffs, all dreamed of immortality. But greed, extravagance, and abuse of public power—that is, the violation of fundamental, economic principles—was the cause of their destruction. These same forces, these same causes, are today pulling the foundation from under our own government.

"As we realize that the mills of economic laws have ground those one-time proud civilizations into the dust of memory, we wonder if we, too, shall continue violating these same laws and likewise perish, or shall we work in harmony with these unchangeable principles and survive. Talking, complaining and criticizing will do no good. If it would, we have had plenty to gorge us on unprecedented prosperity for the next 500 years. We must have immediate action—leadership. The automobile builders are in an enviable position to supply that leadership."

N. A. C. C. CLARIFIES TAX AMENDMENT

(Continued from Page 1)

(a) of the Revenue Act of 932 is amended by striking out the words "or with any person other than a dealer," and by adding at the end thereof a new sentence, as follows: "If any article has, under a contract of the character above described, been delievered prior to June 21, 1932, to any person (other than a dealer or other than a person intending to use the article as material in the manufacture or production of another article, or to sell it on or in connection with, or with the sale of, another article), no tax shall be collected under this title."

Senator Smoot, chairman of the Senate Finance Committee, explained the amendment to the Senate as follows:

"Section 625 of the Revenue Act, passed on June 6, contains a provision that if a contract for the sale, after the effective date of the act, of any article does not permit the vendor to add the tax to the price, then the tax shall be borne by the vendee. And amendment adopted by the Senate provided that in case of such contracts with any person other than a dealer no tax should be collected either from vendor or vendee.

"At that time, and at the time of the conference, it was not appreciated that many large consumers have long-term contracts made before May 1, under which title will not pass till after June 21, the effective date of the act. The joint resolution remedies this situation and confines the exemption to cases where deliveries are made prior to June 21, under a contract made before May 1, but where title does not pass till after June 20."

PONTIAC PLANTS SPEEDING OUTPUT TO AVOID NEW TAX

(Continued from Page 1)

been running a heavier schedule this month than last, the plant being operated on a three-day a week schedule, instead of two.

The tax on accessories will affect the Baldwin Rubber Company, which has been on a twenty-four-hour day with three shifts to supply orders for Ford and the Chrysler interests. The American Forge and Socket Company, making auto accessories for several automobile plants, will also be affected.

What is to happen after June 21 has not been indicated. One factory official jokingly intimated that "after June 21 the depression will begin." Local plants are expected to close for a period this summer for inventory and vacations. The length of the inventory period has not been determined.

TRENTON TRADE GROUP HAS GOLF MEETING

Trenton, N. J., June 16.—Members of the Trenton Automobile Trade Association spent yesterday afternoon at golf at the Yardley Country Club. They were entertained by George W. Maguire and C. W. Mack.

The association members participated in their monthly business meeting and dinner at the clubhouse.

William A. Weinmann, president of the association, presided at the dinner meeting.

FORM CHEVROLET FIRM

Macclenny, Fla., June 16.—The Powers Chevrolet Company has been formed here by H. F. Powers, A. Powers and W. F. Wells.

MAY TRUCK SALES 18,500 BASED ON 23 STATES AND D. OF C.

(Continued from Page 1)

ceived the total sales of commercial vehicles during the month of May should be about 18,500 units. This compares with a total of 33,489 sold in May, 1931.

In considering these figures we must as usual bear in mind that Ford commercial units were not selling at a high rate during May just past. The total will probably not run over 5,500 units, whereas in May, 1931, the number of Ford commercial cars sold totaled 15,671. With June Ford will play a more important part in the general sales total, though even he, with new models on tap, will probably run behind last year's levels.

DODGE DELIVERIES UP 15.7% LAST WEEK IN MAY

Detroit, Mich., June 16.—Reports wired to the factory today from Dodge regional offices throughout the country showed that deliveries by Dodge dealers for the week ended May 30 were 2.5 per cent. ahead of deliveries during the previous week.

Compared with 1931, deliveries for the week showed a 15.7 per cent. increase.

COMING EVENTS

JUNE

12-17—White Sulphur Springs, W. Va. Society of Automotive Engineers, summer meeting.
20-24—Chicago, Ill. Motor and Equipment Wholesalers Association, Edgewater Beach Hotel, summer conference.
20-24—Atlantic City, N. J. American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall.

JULY

3—France. Grand Prix Automobile Race.
5- 9—Southampton, England. Commercial Car Show.
9-10—Belgium. Grand Prix Automobile Race.
17—Germany. Grand Prix Automobile Race.
20-22—Llandrindod, Wales. Commercial Car Show.

OCTOBER

3- 7—Buffalo, N. Y. National Metal Congress. Sponsored by American Society for Steel Treating, with cooperation of American Society of Mechanical Engineers, Institute of Metals and Iron and Steel Divisions of American Institute of Mining and Metallurgical Engineers, American Welding Society, Wire Association.
3- 7—Washington, D. C. National Safety Council, meeting.
13-22—London, England. Olympia Show.

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A REAL EMERGENCY BRAKE

APPLICATION OF AERODYNAMICS TO THE PRESENT MOTOR CAR

By HERBERT G. WINTER
Consulting Engineer Briggs Manufacturing Company

I do not believe it necessary to go into the history of streamlining, for we are all aware that it dates back to the very early part of this century, and even before, when we consider the work done on boats and water craft. With the tremendous popularity of the airplane in the last few years, another application was brought to our attention, one that has been under our very noses for years and that had received liuttle consideration from this standpoint. Efforts were made from time to time to interest motor car manufacturers, but the designs submitted were such that, in the light of current practice, they seemed unsaleable.

Aviation, with its romantic lure—the transoceanic flights, its heroes, its publicity—held our attention. After the war the planes appeared to be cleaner in design, had more grace, beauty and speed. We became familiar with the aircraft nomenclature, its shapes and curves, and now the artist and designer saw possibilities in adapting these lines to other fields—the automobile, for instance. We were told that an airplane fuselage would make the ideal body for a motor car. Nodding our heads, we began to add various items that did enhance the appearance and performance. We even went so far as to show by wind-tunnel tests that we were right in applying such principles. We undoubtedly were, within limits.

I believe that an engineer when making a statement of any kind should add "within limits," "if all the assumptions are correct," or "more or less," and to this statement of mine I shall add "within limits."

In the development of aeronautics, millions of dollars and years of time were spent in studying the flow of air about certain types of shapes. We realize this study is very broad, but few realize the scope to be covered by study on the flow about an automobile. I believe it is nearly as great. The motor car is not like the airplane or airship, and should be studied with this in mind.

The statement has been made heretofore that if each designer were to make an effort at streamlining and a real appreciable saving in drag gained, that all the cars would soon look alike, and the expression of individuality become extremely limited. Evidently we are nearing that stage now. The Vee radiator vogue was started some two years ago, and those that did not adopt it last year have done so this year, with few exceptions. The sloping windshield now sweeps the industry. Neither of these ideas is new, but the acceptance by even the conservative manufacturer shows a trend toward uniformity of design already. An aerodynamical study was directly responsible for the recent sloping windshield, but are we to believe that this exhausts the possibilities in a low resistance windshield design?

Let us, for a moment, consider the statement previously referred to about the fuselage being the best shape for an automobile body. With the exception of a few airplanes such as the Lockheed, the new Boeing bomber, and the Fleetster, etc., the fuselages are nothing but tapering rectangular boxes. These fuselages have certain duties to perform other than being lines of low drag. They must be long enough and strong enough to carry the tail surfaces, the size of which has a very definite relationship to fuselage length. To gain a high strength weight ratio with the steel tube construction, the corners are square. The flat top is useful in the respect that it gives a certain amount of lift when the ship is landing, decreasing the speed. Almost all of these fuselages have a relatively high drag coefficient, drag coefficient being drag per unit area, for a streamlined body as those abovementioned factors make it too long. In fact, it might be stated, that the ideal airplane will have no fuselage; it will be all wing.

High speed airplanes appeared with the wheels streamlined, the so-called pants, or spats. Wheels on an airplane are considered parasite drag, and are, you might say, a necessary evil when the ship is in the air. These wheels are usually a considerable distance away from the other parts of the plane and may be shielded with very good results. Does it seem correct to adopt this particular form of streamlining to the wheels of an automobile, which are very close to the major parts of the car, and which, unlike those of the airplane, rotate and turn to guide the car? Does it not seem that there are other problems and factors entering into this consideration and that the answer will be, like more of our answers, a compromise?

The Briggs Manufacturing Company some time ago started an aerodynamical study on the automobile. Nothing was to be taken for granted; every step was to be proved. We had the data from a great many other tests, but these all seemed headed in the same direction, the result being a uniformity of design. Obviously this is not what was wanted. The industry is looking for an expression of individuality.

It is my contention, and I am now attempting to prove, that a relatively efficient aerodynamical form may be found without digressing entirely from the accepted shape and contour of the present day motor car.

We all appreciate that there are two kinds of drag, neglecting induced drag (which is a component of lift); first, skin friction drag, and second, turbulent drag. This turbulence immediately directs our attention to the rear of the car, but this is only a portion of the total. Even on streamlined shapes the total drag never is skin friction alone. We can approach it, but never equal it, for turbulence of some degree always exists.

In Figs. 1 and 2 we show the velocity gradients of the two types of flow. In the first case, we have the theoretically pure laminar flow. Laminar flow is such that the layers of air, or fluid, are parallel to the surface over which they move. At the surface the velocity must be zero, in each case. With the laminar flow the velocity gradient is uniform or linear. This type of flow, if it does occur, does so at low velocities. As the velocity increases, the flow becomes unstaple and breaks into turbulence. Fig. 2 shows the velocity gradient for turbulent flow. The thickness of the flow to where the velocity has reached a maximum is termed the boundary layer and may be seen by the amount of dust which accumulates on the surface of the model, the walls of the tunnel and on even the propeller used to move the air.

Energy, in the form of heat, is consumed in this region, and, consequently, at the rear the air does not come to complete rest, but has a velocity component in the direction of motion.

Streamlined flow is impossible unless each particle of air comes to rest after being disturbed. By this is meant that it must have the same pressure, velocity and direction of motion as the particle next to it. If we express the pressures in front of the body by $P + \frac{X^* V^2}{2} = \text{constant}$, we may express the pressure behind the body by $P + \frac{X^* V_1^2}{2} = \text{constant}$, V_1 being less than V, and the loss in energy being the difference in $\frac{P V^2}{2}$ and $\frac{X^* V_1^2}{2}$. If we can increase V_1, the energy loss may be decreased proportionally.

This dynamical pressure $\frac{X^* V^2}{2}$ appears in our equation for drag as $D = C_o A \frac{X^* V^2}{2}$ where A is the area D the drag, C_o the plain number coefficient, and $\frac{X^* V^2}{2}$ is the pressure difference, X^*, the mass density of the air.

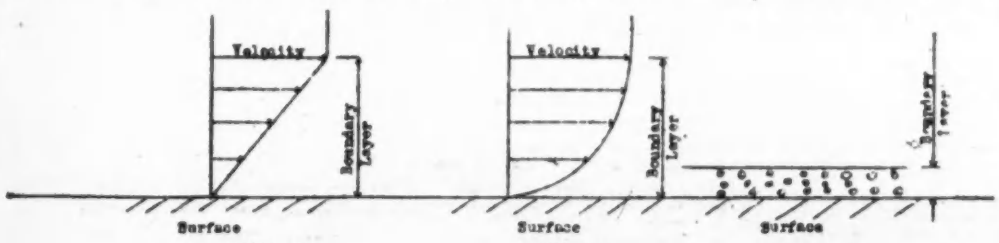
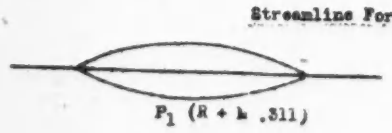
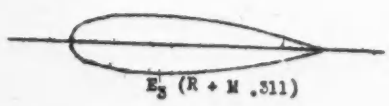


FIG 1. FIG 2. FIG 3.

Streamline Forms



P_1 (R + L .311) $D_c = .000111$



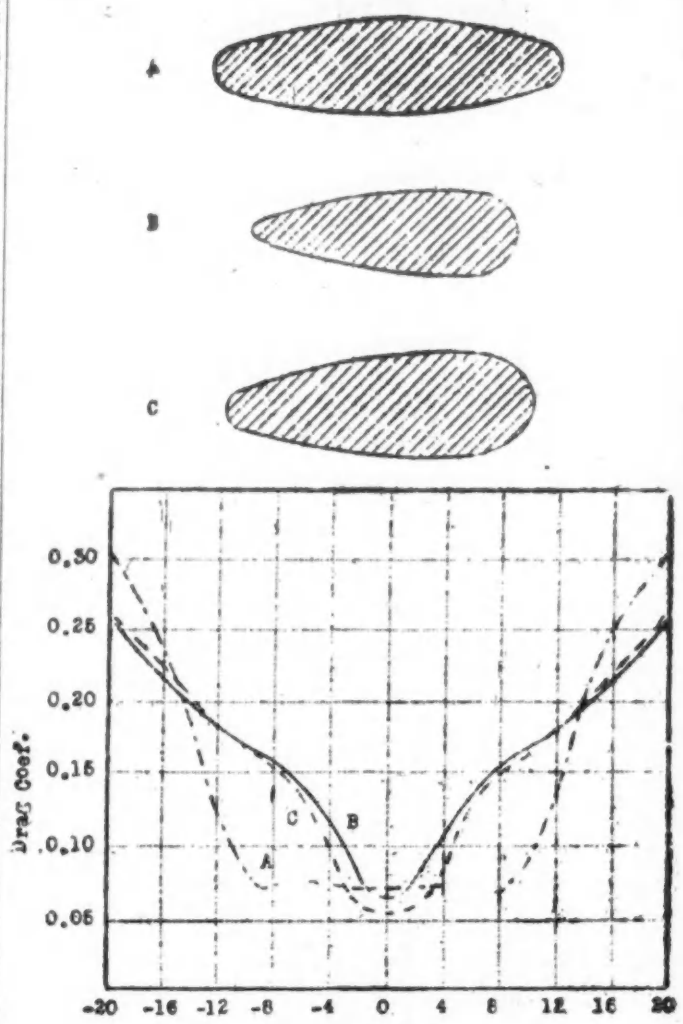
E_3 (R + M .311) $D_c = .000117$

E33c T E 3 (R + M .607) $D_c = .0000931$

Warner, Airplane Design

FIG 4.

Test of Streamline Wire at Various Angles of Yaw



From Cowley's Aeronautics

Also R & M 266

FIG 5.

Spheres, cylinders (when placed at right angles to the wind stream) and objects having a blunt rear end show very interesting phenomena, in that the type of flow is changed rapidly from laminar to turbulent flow of a very low order. (See Fig. 3.) This takes place upon increasing the speed to a critical value. It is possible to cause this change without an increase in velocity, as has been demonstrated by wrapping a wire about a sphere such that it is at right angles to the wind stream and some small distance ahead of the maximum thickness. With the proper size of wire and location, the drag has been decreased more than 40 per cent. (See Fig. 3A.)

It may be seen, then, that it is

(Continued on Page 7)

ρ *This is the symbol referred to by X^* above.

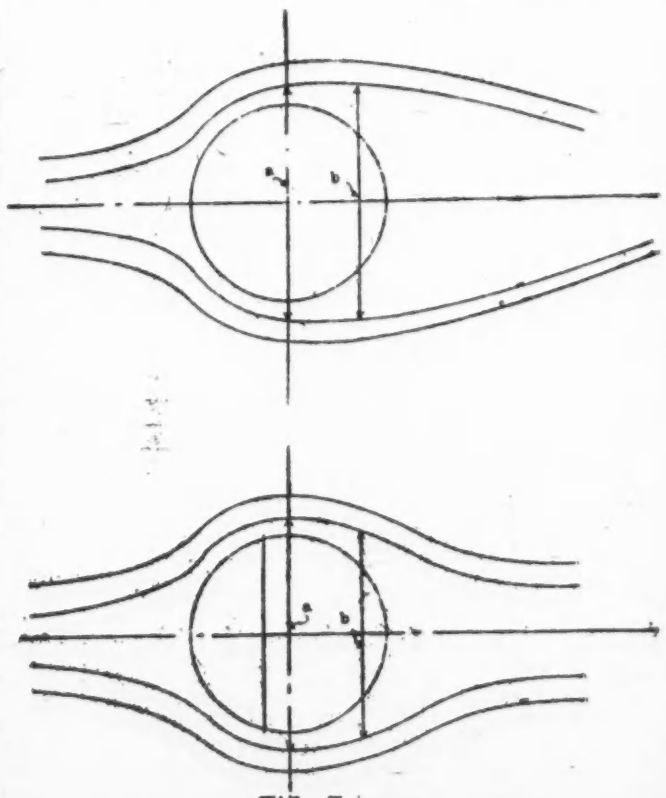


FIG 3A.

WHERE DO WE GO FROM HERE

(Continued from Page 3)

consumers of their product. I believe then that the members of an organization should hold similar ideals.

Any enterprise thus carefully projected, organized and promoted is not likely to have a spectacular or mushroom growth, because it is unlikely to go to the violent extremes that would swing it through cycles of abnormal expansion and contraction with the inevitable results that follow such movements.

Any car that is an expression of such a policy would need to be long-lived and economical, I should say, more than ordinarily long-lived and economical. It probably would not be the biggest "package" available for its price, but it is conceivable that its performance might be superior to that of larger, higher priced cars; because it would inevitably, I think have the power to do things easily, and when an automobile has the power to perform with ease it usually operates with economy and, because of the low stresses involved, is likely to live long and happily.

Because we have presupposed a very much un-standard way of going about things, the car we have in mind cannot look like any of the standard combinations of all the other fellows' conceptions shaken up in a basket and the result turned out labeled "the last word in automobiles." Rather, it would be something to which the well-worn advertising term "utterly new and different" might be applied with a decent regard for the truth.

Inasmuch as the success of such an automobile, according to the theory I hold, will depend upon its acceptance by the younger generation, we older people may not presume to decide arbitrarily what it will look like. We must first—if we are to be commercially wise (and we can never forget that the automobile is an economic instrument, as well as factor definitely and immediately subject to economic laws)—obtain a cross-section of the younger element's ideas as to what is good style, what are good lines, what are good colors, what is good taste.

I get litters almost every day from young people giving me their ideas of what a car should look like and be and do. Some are bizarre, some entirely impracticable from the economic standpoint as the industry is now organized, and all of them are immature and amateur; but, if we were to take a cross-section of their contributions and use them to dilute our own ideas and prejudices, they would point out the way for us to go. I thought somewhat of bringing along to this meeting some sketches illustrative of my interpretation of that consensus; but then I remembered that after all some of us compete for the same blocks of public favor, and I cannot be completely altruistic. However, I think I can safely unveil at least a meager exhibit, just to picture what I mean, and at the same time mention certain persistent demands which crop up in so many of these letters.

One thing stands out prominently; more performance is always wanted. The clamor is for more power, higher speed, greater flexibility, fewer handling operations, more nearly automatic response. Now we are sufficiently experienced to realize that every major advance we make in those directions DOES result in a more satisfactory, more economical job.

Another of youth's insistences, as you may well have anticipated, is on appearance. "Snappier," "smarter," they use the current terms to designate it, but so far as I can define their argot I should summarize the hundreds of suggestions they send in as follows:

Their demand is for cleanliness of line and freedom from protrusions, possibly even to the extent of doing away with such things as outside door handles and hinges. They appear to have their hearts set on something smooth and clear and free, something as trim and taut as the airplane; which, although it is not their own conception, is certainly more wholeheartedly accepted by them than by any other age.

But far beyond the specific value of the crude and nebulous suggestions in the mail, scrawled by the embryonic generation, is the warning constantly so placed before my eyes; the warning that, like it or not, youth will be served. This is as true in our industry today and will be as true in the future as it has always been in the past.

Again I close my eyes and go in memory back to the days of my boyhood and that first automobile of my father's. Again I remember how the elder generation did not approve and how this strange new contraption was finally matched by others equally strange only because other young men like my father sought them out as the harbingers of a new era of transportation.

Remember with me if you will the automobile of thirty years ago, fashioned in all its main attributes after the horsedrawn carriage of the day; some of them even retaining the whipsockets. Try to recall the thirty-year-ago fashions in such things as homes, women's dress, the theater, popular songs, newspapers and periodicals, the street cars, the railroad coaches. Contrast the whole mode of existence then and now and ask yourself if the automobile has kept and is keeping pace with these changing times.

They who pioneered and perfected the motor-car were then the far-horizon-eyed youth of the fledgling generation; but many of us who were young then are the older generation now; and youth, the most radically rampant youth of the world's history, crowds us on with insatiable demands for change and progress.

I believe that it is vital for us to keep out of the easy-chair in the daytime and use it only at night as a place where our reborn imagination is given free play to work out the automobile of the future.

(To Be Continued)

A sound investment—Wisconsin Axles; with an uninterrupted record of dividends in low upkeep, freedom from trouble, bigger profits.

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Brockway Trucks

Meet all time Quality demands and Economy requirements—For twenty-three years BROCKWAY has stood for the principle of building motor trucks on special standards to meet the specific demands of the various truck using industries.

BROCKWAY MOTOR TRUCK CORPORATION
Main Office and Factory
CORTLAND NEW YORK

Cumulative New Commercial Car Registration Statistics, May, 1932

Returns for today: Arkansas, Florida, Idaho, Indiana, Kansas, Minnesota, Missouri, Montana, North Carolina, Rhode Island, South Dakota, Utah, Virginia, District of Columbia

In this table, twenty-one states and the District of Columbia.

States	Autocar	Brockway	Chevrolet	Diamond-T	Dodge	Federal	Ford	G. M. C.	Indiana	International	La France Republic	Mack	Pierce-Arrow	Reo	Sterling	Stewart	Studebaker	White	Willys-Overland	Miscellaneous	Totals	States
Arkansas			41		4		38	2		8							2	1			96	Arkansas
Delaware	2		24		1		31	5	1	10		1		2		2	3		2		84	Delaware
Florida			61		2	1	88	3		14		1						1	1	19	191	Florida
Idaho			32		2		39	2		7									1	2	85	Idaho
Illinois			243	46	46	7	244	25	2	107		1	1	10			17		6	23	778	Illinois
Indiana			133	5	18	1	116	15		67				6			10		1	7	387	Indiana
Kansas			120	3	10	1	87	8	1	25	1			2			5		1	5	269	Kansas
Maryland	9	6	115	1	12	2	105	21	3	49		8		5			8	13	1		358	Maryland
Michigan	1		207	2	45	9	382	22		56	1	2		9			17	2	2	6	763	Michigan
Minnesota			250	14	47	10	232	16		68		3		12		1	11	3	4	4	675	Minnesota
Missouri			245	17	25	4	233	19	2	57	2	2	1	10			6			18	641	Missouri
Montana			32		5	1	37	4		17		1					2		2		101	Montana
North Car.			120	1	11		120	9		14		2		1			2	4		7	291	North Car.
North Dakota			27		5		32			25	1						2		2	2	96	North Dak.
Rhode Island			30	3	7	7	69	7		7				8				1		1	140	Rho. Island
S. Carolina			41		7		27	1		3								1		2	82	S. Carolina
S. Dakota			30	2	8		18	1		10				1			2	1			73	S. Dakota
Utah			31		3		34	3		8				1				1		1	82	Utah
Virginia			180	1	21	3	132	11	5	24	3	3		7				4	1	3	398	Virginia
West Virginia			47	1	12	1	63	4	2	16		2		5			3	1	5	1	163	West Va.
Wisconsin			116	13	22	2	108	11	3	27				5	1		8		3	14	333	Wisconsin
Dist. of Col.			46	3	5	4	35	14		3								3		1	114	Dist. of Col.
Totals	12	6	2171	112	318	53	2270	203	27	622	8	26	2	84	1	3	98	36	32	116	6200	Totals
Arkansas, '31			63		2		100	2		13				1				5	1	3	190	Ark., 1931
Delaware, 1931	4		41		2	1	41	1		12									1	4	107	Del., 1931
Florida, 1931			122		7	4	188	2		27				6				2	3	3	364	Florida, '31
Idaho, 1931			55		16		89	3		9							4		3		179	Idaho, 1931
Illinois, 1931	3	5	429	36	71	3	641	18		137		13		6	5	1	26		15	43	1452	Illinois, 1931
Indiana, 1931	1	13	330	8	57		382	26		94		2	1	6		4	31		21	4	980	Indiana, '31
Kansas, 1931		4	196	2	19		166	9		55				2		4	9	1	10	3	480	Kansas, '31
Maryland, '31	9	5	144	6	18	2	224	24		46		14		6	1	3	7	3	4	2	518	Md., 1931
Michigan, '31	3		330	5	49	19	765	23		61	6	6		17		2	8	1	12	17	1324	Mich., 1931
Minnesota, '31			328	15	30	7	413	10		128	1	4	1	14			20	6	25	11	1013	Minn., 1931
Missouri, 1931		7	329	10	25	9	366	10		42	1			2	1		9	5	17	14	847	Missouri, '31
Montana, '31			32		3		76	6		30		1		5	1		1		2	2	159	Montana, '31
N. Car., 1931	1		245		24		267	5		36		2		4			1		2	11	598	N. Car., '31
Nor. Dak., '31		1	73		16		82	5		76				1			5	1	3		263	Nor. Dak., '31
Rho. Isl., '31	2		46	6	26	3	119	4		10		7		4	2	1			1	3	234	R. I., 1931
S. Car., 1931			125		3		151	1		9	1	1		1			3			2	297	S. Car., 1931
S. Dakota, '31			64	7	11		81			46				2			6			2	219	S. Dak., 1931
Utah, 1931			55		4		74	4		9				4			1		1	2	154	Utah, 1931
Virginia, 1931	5	3	325	2	27	6	338	14		44	2	4		3		1	3	6	5	7	795	Va., 1931
West Va., 1931	1	3	150	1	25		155	3		25		2		5		1	5	5	8	2	391	West Va., '31
Wisconsin, '31			319	17	19	2	402	17		59		1		4	3	1	18	2	19	17	900	Wis., 1931
D. of C., 1931	3		46	6	3	1	124	6		9		7		1				2		7	215	D. of C., 1931
Totals	32	41	3847	121	457	57	5244	193	*	977	11	64	2	94	13	18	157	39	153	159	11679	Totals

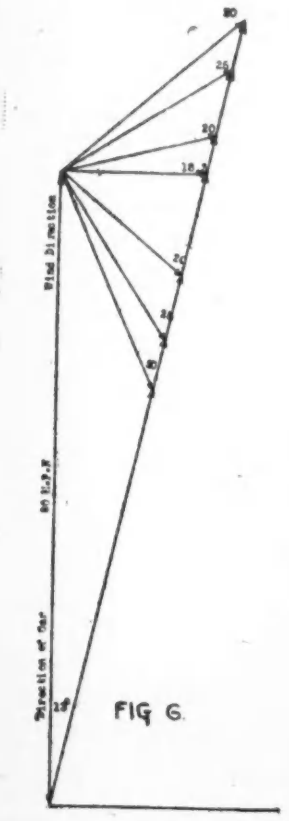
*Combined with Brockway.

APPLICATION OF AERODYNAMICS TO THE PRESENT MOTOR CAR

(Continued from Page 5)

very important to have a smooth surface exposed to the air, or the boundary layer may be so thick that it is impossible to obtain this turbulence of the lowest order.

Our interest in aeronautics has given us a definite idea as to the shape of so-called streamlined bodies. We are familiar with the fact that a blunt-nose, pointed-tail



form (with the maximum cross-section area at about 30 per cent. of the length) has a low drag. Let us study this point. The streamlining of an airplane is designed to give minimum drag in straightforward flight. This is possible, as the airplane creates its own tornado and the air passing over each part of the plane has the same direction, whether the plane is flying directly into the wind or at some angle to it. In other

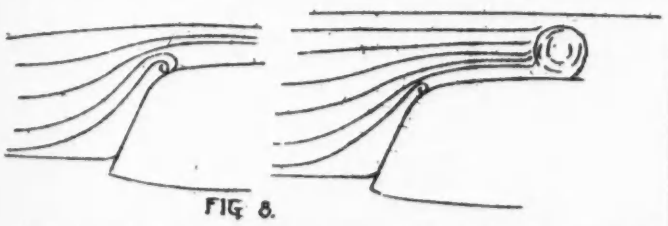


FIG 8.

words, we may set the various streamlining of parasite items, such as struts, wires, wheel housings, etc., at the position of minimum drag and do not have to make a compromise for different wind directions and velocities.

The streamlining on an airplane is nearly all classed as of "flat-surface" type. Wires, struts, wings have the maximum thickness at about the 30 per cent. point, which is correct within limits. I do not know of any such flat surfaces, with the exception of the running boards, on an automobile.

For airships and bodies of revolution (such shapes that the cross-section through any position is a disk) we find that authorities agree that the position of maximum cross-section is between 40 and 45 per cent., and prove this by test. Figure 4 shows some shapes and their relative drag co-efficients. You will note that E_1, a familiar streamlined shape, had a higher drag than the symmetrical one, P_1. $H_{.25}c$, at the bottom, has its maximum cross-section nearer the rear end than the front, it actually being at 54 per cent., and its drag is the lowest of the three shown.

Please do not take this statement the wrong way. In the design of airships many items enter into the control of the shape, such as gas capacity, weight, balance, positions of engines, etc., and so, if the maximum cross-section of the next airship that you see is not in the neighborhood of 40 or 45 per cent., it should not be assumed that it is poorly designed, but that it is the best compromise that could be had. Speaking in terms of philosophy and also physics, does it not seem more or less reasonable that, in shapes of a high fineness ratio—that is, very long, compared with their cross-section—adding a point or, rather, pushing out the point in front should make little difference?

It is my contention that an automobile, while having no relation to an airplane, blimp or pollywog, excepting that it is immersed in a fluid, may be classed more closely to a body of revolution, than to the others.

With the automobile, the direction of the wind is not constant, and, therefore, we need to design a car that is a compromise, so that the drag will be low when the direction of the wind is other than parallel to the motion of the vehicle.

The aeronautical records have a great deal of data on this subject. Figure 5 is an old test on streamlined wires. These shapes, therefore, are not perfect streamlines, but they do bring out the point in mind. I have not, as yet, been able to put my own data in this form. Just why Mr. Cawley found it necessary to plot his data either side of the zero degree mark, is more than I know. The point is that the streamlined section, that is, the blunt-nose-pointed-tail, with maximum cross-section at 30 per cent. of the length has a greater drag over a considerable range, than the symmetrical one at the top.

We know from our experience with airfoil sections that at the same speed an increase in the angle between the direction of flow and the airfoil will give a greater lift and drag, up to the burble point (where the flow breaks away from the wing), which lies in the neighborhood of fourteen degrees. The symmetrical section gives a relatively low lift and total drag.

If we now plot a forward speed, let us say of eighty miles per hour, and several cross winds of various intensities at various angles, we see that the symmetrical shapes are quite superior to the blunt-nose type. Figure 6 shows a range of cross winds that are possible, and still have the drag less than the so-called blunt-nose-pointed-tail type.

The value of curved surfaces, I believe, has never been fully appreciated. The substitution of curved for flat sides very sharply reduces the effect of yaw on resistance. The importance of flat sides is shown by Wieselsberger* in which object of round and square cross-section, but otherwise similar, were tested at various angles of yaw, yaw being the difference in direction of the axis of model and air flow. With the circular cross-section, a ten-degree angle from position of minimum drag increased the drag 33 per cent., while on the square the increase was 235 per cent. This test was on objects without any appendages, but shows clearly the respect we should have for generous radii and curves. This partially answers those who are skeptical of streamline effects in high cross winds.

The statement that the rear portion of the object needs more attention than the front has been, very possibly, overemphasized. It is more important to have no sudden or discontinuous changes in the curvature of the forward surface. An interesting study was made by wrapping wires around streamlined models at right angles to their axes†. A wire having a diameter of one-six-hundredth of the maximum diameter of the model placed at 10 per cent. of its length from the nose was found to increase the resistance 60 per cent. With the wire diameter increased to one-one-hundredth of model diameter, the resistance was increased 90 per cent. The wires were then tested at 45 per cent. of the length near the maximum cross-section of the model, and the two wires showed an increase of only 20 and 70 per cent., respectively. Realize that the length of wire used at the latter position is many times longer than that at the former. If the smooth flow is disturbed on the forward portion of the blunt-nose streamlined body, there is nothing that can be done to the rear to correct its effect.

Consider this statement a moment. If we use a blunt-nose design, we cannot afford to have even a molding around the front, for here the pressures are extremely high. On the other hand, a symmetrical shape has much lower unit pressure over this portion, and moldings may be used with less harmful results. We realize that to omit moldings would handicap the designer.

This preliminary gives us a basis of design which was incorporated, as far as possible, in our Red Model, without changing the chassis, seating arrangement, head room, etc. It could hardly be called a radical change, but should be borne in mind that it is for study only and does not mean that we intend to build it. This was our first attempt. Fig. 7A.

Summing up the details, we have, first, the forward two-thirds portion of a symmetrical shape; second, smooth surfaces; third, generous radii throughout, and, fourth, a reduction in eddy or turbulent flow sources.

Your attention is probably first drawn to the windshield. This particular design was used for several reasons. We know that when any fluid is impinged on a flat surface it leaves the edges normal to them. So if the windshield sloped backward the flow is downward from the front corner post. This air tends to turn and go over the top, so that its direction is changed twice. The so-called "inverted Vee" allows the air leaving this corner to flow directly over the top.

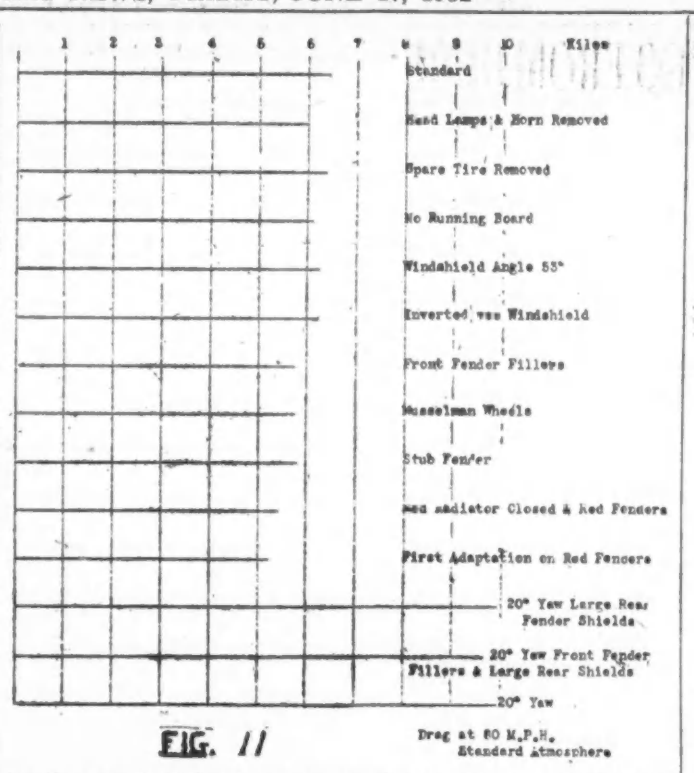
The backward sloping windshield has another objection, in that the air flowing upward over it meets the air flowing directly backward over the top. Figure 8 shows diagrammatically what happens. The former flow is bent backward by the latter and forms an eddy, which grows as it rotates until such size that the air pressure is great enough to blow it back. As soon as it leaves its position, another one forms, and if the periodicity is such that it falls within the audible range, a tapping or drumming will be heard.

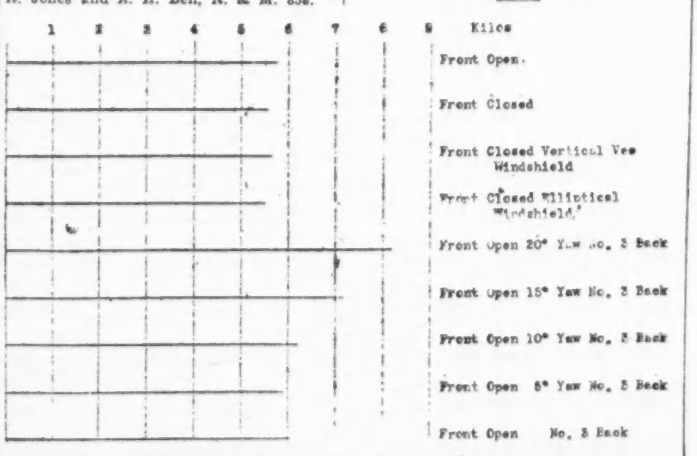
The slope of the windshield may be changed so as to decrease this vortex or eddy, but the vision would then become a greater problem.

Energy that is dissipated in the form of sound may be calculated by measuring the energy input and subtracting the lift and drag. The remainder, assuming there is no deflection of the flat surface, is the sound energy. This procedure will enable us to make a thorough investigation of the wind noises. An interesting study on this subject is to use smoke and a stroboscope. A test was recently run in the University of Michigan wind tunnel on a flat plate. The noise could be heard quite distinctly, and the stroboscope showed 132 vibrations a second, a little above low "C," which is 128.

There are many such vortices about the present motor car, and,

(Continued on Page 8)

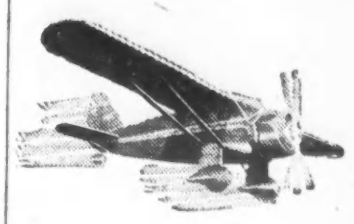

1 2 3 4 5 6 7 8 9 10 Kilos
Standard
Head Lamps & Horn Removed
Spare Tire Removed
No Running Board
Windshield Angle 55°
Inverted vee Windshield
Front Fender Fillers
Musselman Wheels
Stub Fender
Red radiator Closed & Red Fenders
First Adaptation on Red Fenders
20° Yaw Large Rear Fender Shields
20° Yaw Front Fender Fillers & Large Rear Shields
20° Yaw
Drag at 60 M.P.H. Standard Atmosphere
FIG. 11


1 2 3 4 5 6 7 8 9 Kilos
Front Open
Front Closed
Front Closed Vertical Vee Windshield
Front Closed Elliptical Windshield
Front Open 20° Yaw No. 3 Back
Front Open 15° Yaw No. 3 Back
Front Open 10° Yaw No. 3 Back
Front Open 5° Yaw No. 3 Back
Front Open No. 3 Back
Drag at 60 M.P.H. Standard Atmosphere
FIG 15.

*"Air Force Exerted on Streamlined Bodies With Round or Square Cross-sections When Placed Oblikely to the Air Stream," by Wieselsberger, C., "Srgebnisse der aerodynamischen Versuchsanstalt zu Gottingen," republished by the National Advisory Committee for Aeronautics as Technical Memorandum No. 267.

†"The Resistance of a Spheroid With Special Reference to the Effect of Wires Placed at Right Angles to the Axis," by R. Jones and A. H. Bell, R. & M. 858.

STINSON



AIRPLANES
Can Help Sell Automobiles

Here is the way one distributor uses the airplane to advertise his line of cars and create business.

He purchased a 215 Horse Power closed Stinson Monoplane, and is sending this plane to every town in his territory where he has or NEEDS a dealer—and which has an airport or a safe field to land on. In advance of the plane's arrival in a town, he mails out invitations to all owners of his make of cars to "come out for a ride in this safest, quietest and most comfortable of all cabin airplanes."

He has found that these people not only come in answer to the invitation, but bring their friends, many of them prospects.

This distributor reports that by this method he is building up good will among his owners and their friends whom he hopes to have as owners. He is getting SALES at no more cost than with other forms of advertising. A plane is a TRANSPORTATION unit, and operates at no more cost than a fine motor car driven by a chauffeur.

Learning to fly your own plane is just as easy as learning to drive a car, and much more fun. After you have learned, you can eliminate the expense of a pilot.

We will be glad to go into further detail by mail or person, with any motor car dealer or distributor who is interested in this modern way of getting more business. Write us.

STINSON AIRCRAFT CORPORATION
WAYNE, MICHIGAN
Division of Cord Corporation

STINSON
The Aircraft Standard of the World

APPLICATION OF AERODYNAMICS TO THE PRESENT MOTOR CAR

(Continued from Page 7)

generally speaking, they are formed due to sharp corners and projections.

You will notice also that the Red Model has no louvres in the hood, but that the air is allowed to escape at the rear. The reason for this is that we have a jet of air at a high velocity, which acts on the boundary layer, tending to add energy. Exhausting through the ordinary louvres sometimes causes interesting but detrimental results. I know of one case in which the interference of head lamps, horn, fenders and hood was such that air was actually going in the louvres and out through the radiator.

Our tests were made on a standard production sedan called the Blue Model in this paper. This was quarter scale model, complete in practically every detail, with the exception of shock absorbers, glass, etc., even to a motor, which was, however, electric, to rotate the wheels. The red and blue models have identical chassis and were

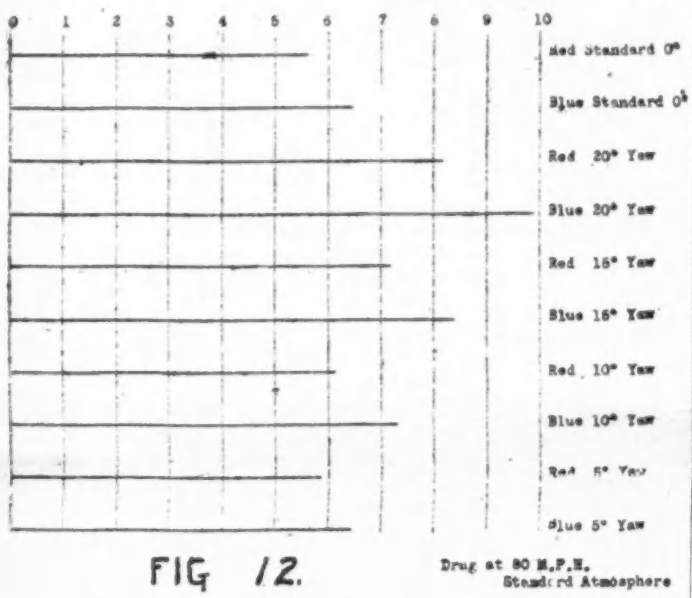


FIG 12.

Drag at 80 M.P.H. Standard Atmosphere

mounted in the tunnel, as shown in Figures 9 and 10. Readings were taken from the one in normal position. It was necessary to have the under parts of the cars as nearly alike as possible to obtain a flow of air at the bottom of the wheels that has no vertical velocity. This is to give the ground reaction.

In our studies of fenders and wheels, we rotated the wheels and synchronized their speed with the air speed. The reason for this is that the portion of the tire which is in contact with the ground has, more or less, a velocity of zero, while the top of the tire is actually traveling at more than twice car speed and the hub is the only portion that has the same velocity as the car.

At the top of the tire, the pressure is above atmospheric, for the air rushing under the fender meets the air being carried around by the wheel. This fan action is considerable, and a non-skid tire increases the effect.

Fifure 11 shows some actual results on the standard model. The head lamps and horn account for a considerable portion. The spare tire on the rear, tends to fill in the low pressure area, and we notice a slight increase when it is removed.

The running board accounts for nearly as much as the head lamps and horn, and this is due to the fact that the air cannot escape freely from its more or less sharp edge.

The "Inverted Vee" windshield equalled a flat windshield at 45 degrees. The latter type would be very hard to see through when dirt or dust accumulates.

A block filling the space under the front fender behind the wheels showed quite a reduction, as did the large 9x13 low-pressure tires on the standard car. A front fender, which was similar to the standard, but which did not run forward on the top of the wheel, and referred to as a "stub fender," has some merit.

We then changed the complete front ends of the two cars and found a 17 per cent. reduction. This reduction was due primarily to the decrease in size of the vortices generated here. On the standard fonder, this vortex at about the rear wheel had a diameter of some 15 to 18 inches, but with the Red fenders was possibly only 5 inches. The area between the hood and fenders is restricted and may be likened to half a Venturi. As the air escapes from this region it expands, and, as the fender is falling away, it begins to rotate, and this vortex continues indefinitely backward.

We made an attempt to limit the rotation by moving the high point of the fender out by the use of clay, and called this the "first adaptation."

We then measured the drag on the body at various angles of yaw, and the results at 20 degrees are shown. The large shields over the rear tires did not seem to help, which possibly proves that the flow was so turbulent that a mere shield could do little.

Fig. 12 is a comparative chart showing the relationship between the two models. It should be stated here that the Red Model had some 15 per cent. greater cross-section area than the Blue. The greatest difference comes when they are at some angle of yaw. It is interesting to note in Fig. 13 that the position of minimum drag for the Blue is approximately at 5 degrees of yaw, while the Red is at more nearly zero. Fig. 14.

Fig. 15 shows the results with various types of windshields; the "elliptical" showed the best factor, but the "vertical Vee" showed up well also. This may be due to the fact that they were made of clay and the corners were very generous curves. This particular body has the sides well rounded here so that the change of direction of the flow is rather small. This is undoubtedly the reason why, on the standard car, a Vee windshield has a higher resistance than a flat windshield with no visor, at even small angles.

There is much yet to be done. For instance, a radiator may have a greater resistance than a flat plate which is of the highest order, being all turbulent and practically no skin friction.

A test, conducted by the Bureau of Standards some years ago, on a radiator in the nose of a plane, having an area abou two-thirds that of the maximum cross-section of the fuselage, showed the drag co-efficient to be 0.0011 when there was no air flowing through it, but when the louvres in the hood were opened the co-efficient increased to 0.0015. The flat nose was replaced by a rounded section (not a radiator) and the drag dropped to 0.00048, a decrease of about 66 per cent.

Every effort should be made to have fillets as large as possible wherever there is a change in direction of contour. Sharp corners should be eliminated. The flow as it leaves a sharp corner is always turbulent.

We could also stand a change in the design of the head lamps. We used an odd-shaped set on the red model. The mutual interference of two or more objects is of great importance. In aircraft performance charts a strut is generally shown to have two times its drag in free air, for the end fittings, with their accompanied interference, may have as much drag as that of the strut itself. There is very little interference or turbulence around these particular lights. The problem now is to find some manufacturer to make them.

The flow at the rear of the red model is much less turbulent than at the rear of the blue, due to the easy curves and relative smoothness.

We believe that this study will give us a great many new design features which, when used in the correct relationship with the others, will have a low drag. Instead of all cars looking alike, a great divergence in design or expression of individuality may be had.

This is a preliminary report and shows some of the interesting features found in our study. You will notice that we are using fundamental aerodynamics and are not limited by the shapes of birds of the air or fish of the sea.

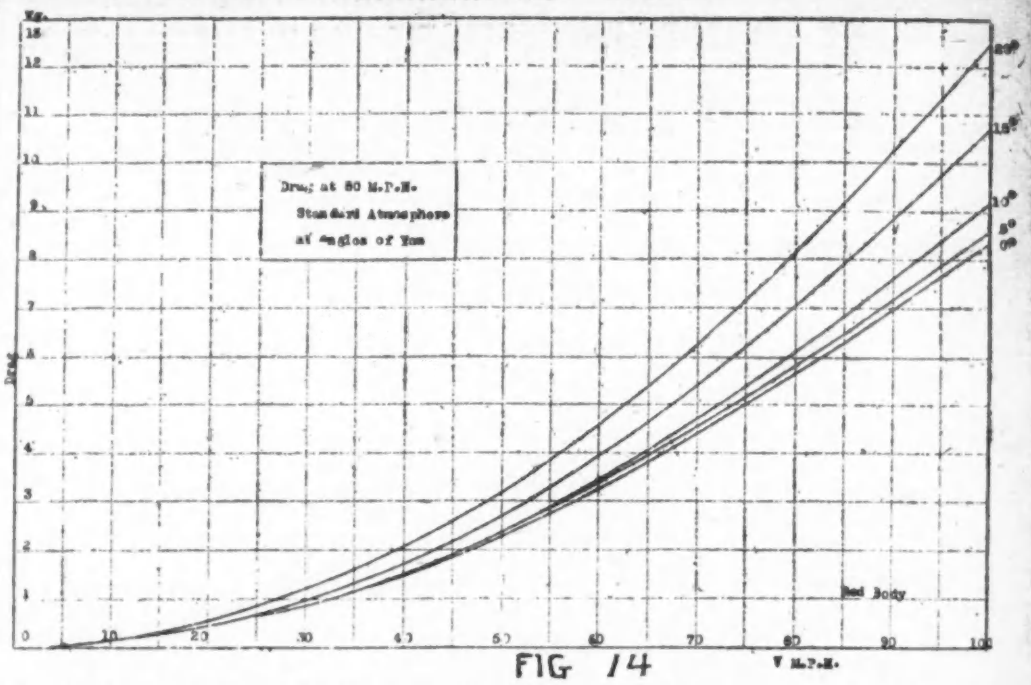


FIG 14

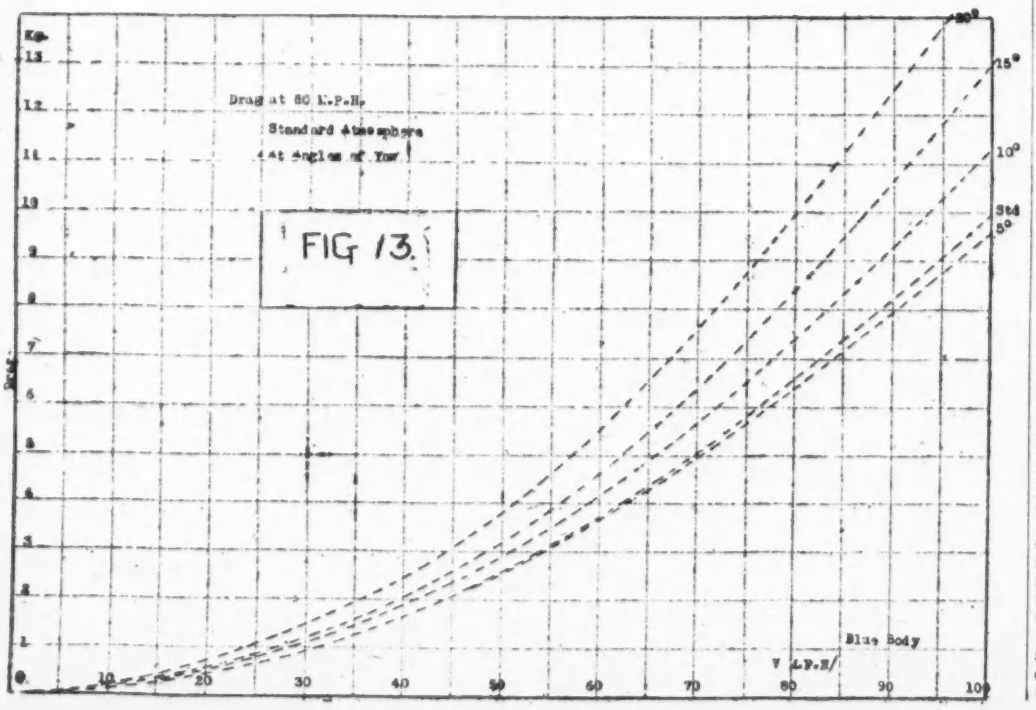


FIG 13.

N. S. P. A. OUTLINES METHOD TO USE UNDER NEW TAX

(Continued from Page 1)

on June 13, and unanimously adopted the following preamble and recommendations for uniform practice for handling the tax, by manufacturers and wholesalers of these products:

Whereas, the burden imposed by the excise tax bill upon an already overtaxed industry, in addition to the heavy decline in gross margin, makes it impracticable for either manufacturer or wholesaler to absorb this 2 per cent. excise tax which might well constitute 20 per cent. or more of the net profit, and

Whereas, it becomes advisable and expedient for both manufacturers and wholesalers to adopt a plan of application of the tax that is workable and free from complications, therefore, be it recommended

That all service parts and accessory manufacturers bill the first customer, including other manufacturers not exempt under the act, for the amount of the legal tax and that this tax be so indicated on each invoice to such first purchaser.

That the manufacturers add 2 per cent. uniform charge to every invoice covering articles of his own production, using the term, "Government Tax."

In cases where one manufacturer acquires a portion of his finished articles from another manufacturer, the 2 per cent. added to invoices covering same to be designated, "Cost Attributed to Tax," or some similar phrase.

That on any parts which might be interchangeable for either taxable or untaxable use under the act, the manufacturer to pay and collect the tax until such time as a specific ruling has been obtained from the Treasury Department.

That owing to the extreme difficulty of identifying tax-paid merchandise, it is recommended that, pending definite rulings from the Treasury Department, manufacturers make no tax refunds on returned goods.

That it be recommended to manufacturers that their prevailing resale schedules or discounts to the trade be unchanged.

That it be recommended to wholesalers when invoicing taxable merchandise to customers, 2 per cent. be added to the net amount of invoice for the taxable items, subject to a minimum of one cent for each invoice or sales ticket, and using the designation, "Tax Expenses"; and be it further

Recommended that specimen invoices for use by both manufacturers and wholesalers, prepared in accordance with these recommendations, be attached hereto to illustrate to members the exact method of standard procedure.

A special joint committee consisting of T. L. Ford, N. S. P. A.; A. G. Drefs, M. & E. M. A.; and C. E. Hamilton, N. A. P. A., was appointed and instructed to confer at the earliest possible date with the Treasury Department at Washington for the purpose of securing approval of above recommended standard policies, and rulings on other questions in regard to the collection of the tax.

Recommended method of listing Federal taxes on invoices:

Manufacturer to Wholesaler

100 Valves @ $1	$100.00
Government tax, 2%	2.00
	$102.00

Wholesalers to Dealers

3 Gaskets	$2.25
1 Flywheel gear	4.00
10 Spark plugs	7.50
4 Pistons	16.00
	$29.75
Less 30%	8.93
	$20.82
Tax expenses, 2%	.42
	$21.24
Install flywheel gear	1.50
	$22.74

DOXEY SALES MANAGER

Nashville, Tenn., June 16.—Robert M. Doxey has just been appointed sales manager of the Auto Bearings and Parts Company of Nashville.